

San Joaquin River Basin Plan Amendment Addressing Salinity and Boron April/May 1999 Update



Agricultural Regulatory
and Planning Unit

Agenda

- Introduction and Background
 - problem and area of concern
 - current water quality conditions
- Developing a Basin Plan Amendment
 - components
 - overall process
 - timeline
- Current Status
- Public Involvement

Why are we here today?

- Provide background on salt and boron water quality problem in the San Joaquin River
- Describe the Basin Plan Amendment Process and provide update on the Basin Plan Amendment for Salt and Boron in the San Joaquin River

Questions to be Answered

- Why a Basin Plan Amendment for Salt and Boron in the San Joaquin River?
- What is a Basin Plan Amendment?
- What is the Basin Plan Amendment Process?
- What is the Current Status of BPA?
- What can Interested Parties Do?

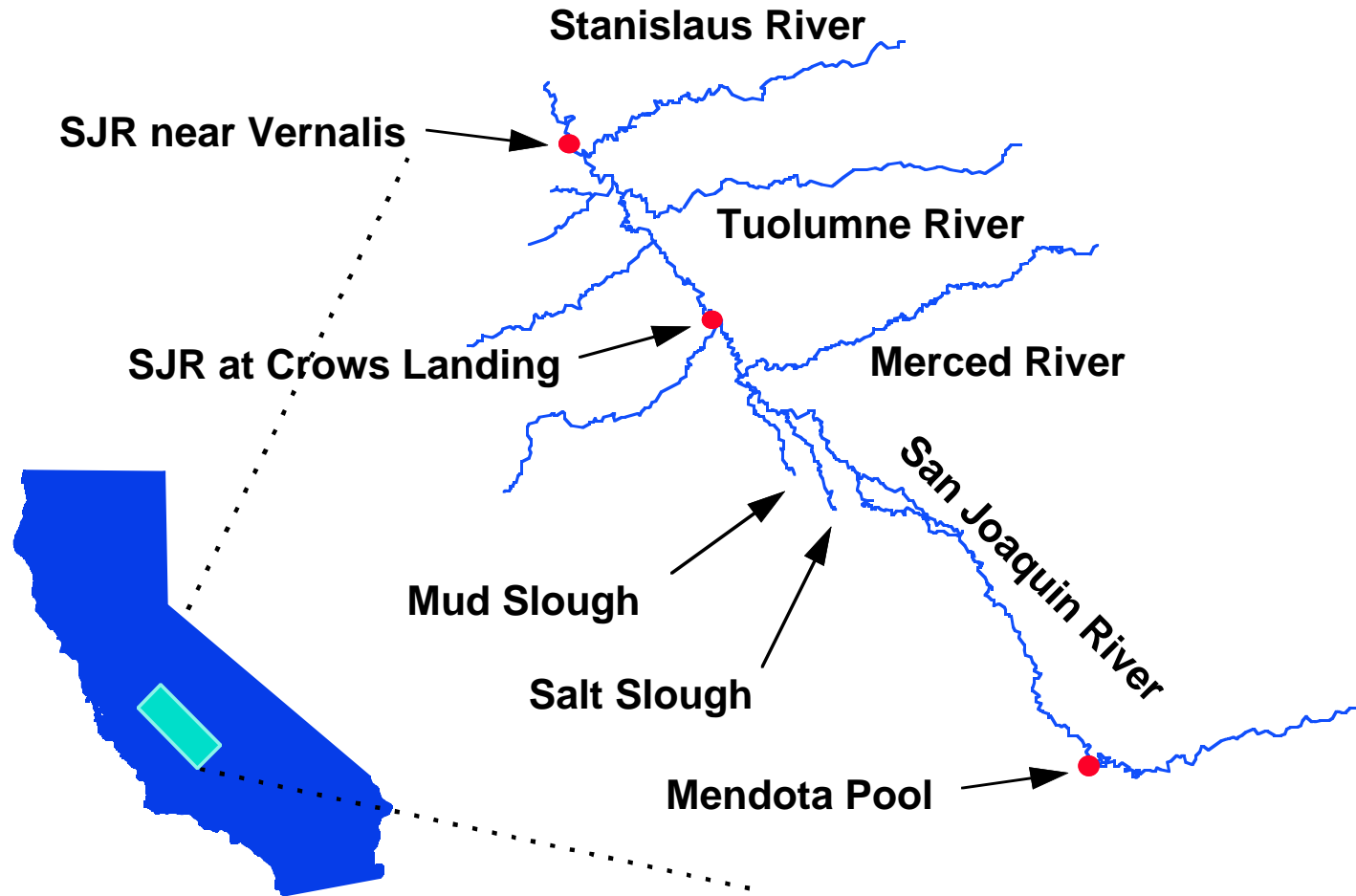
Why a Basin Plan Amendment for Salt and Boron in the San Joaquin River?

- Salt and boron concentrations are affecting beneficial uses
 - lower San Joaquin River
 - southern Delta
- Existing water quality objectives are being exceeded
- Directed by the SWRCB in 1995 to develop a salinity control program

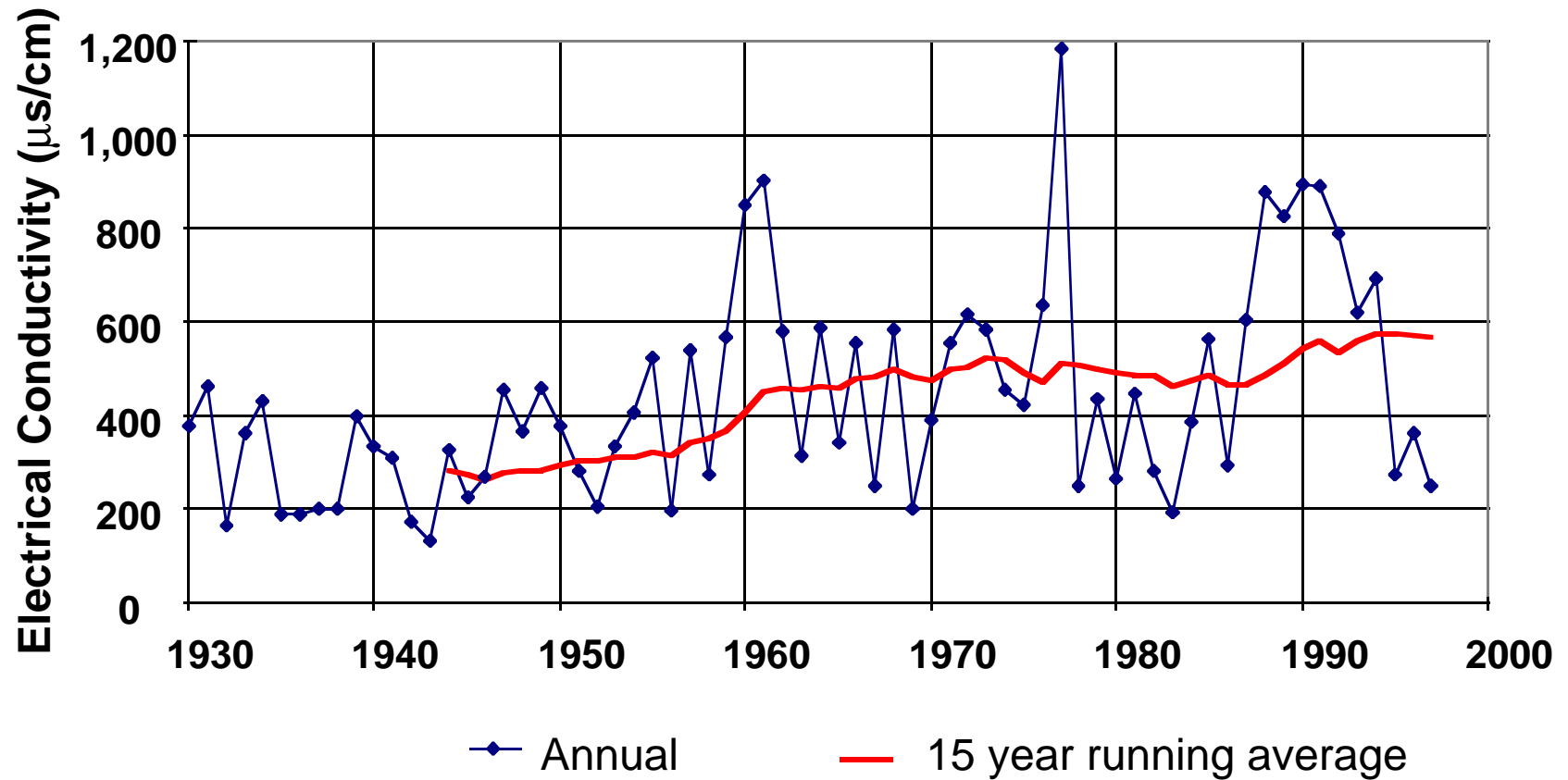
Technical Background

- Area of Concern
- Current Water Quality Objectives
- Past and Current Water Quality Conditions

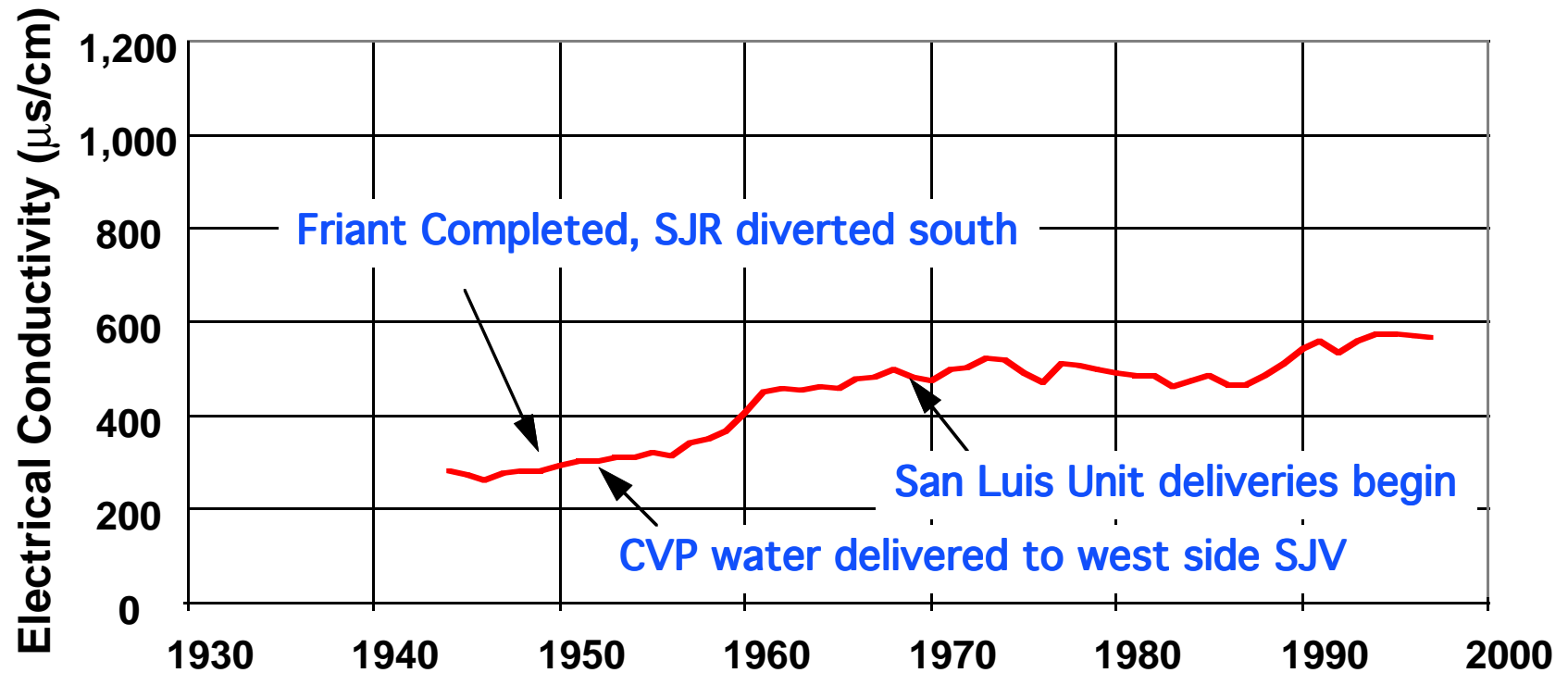
Lower San Joaquin River Basin



SJR near Vernalis Mean Annual Electrical Conductivity



SJR near Vernalis Mean Annual Electrical Conductivity



Salinity Water Quality Objectives

In 1991, the SWRCB adopted the following water quality objective for electrical conductivity (EC) in the Bay-Delta Plan for the San Joaquin River at Airport Way Bridge near Vernalis:

Objective ($\mu\text{s}/\text{cm}$)

700

Time Period

April through August

1,000

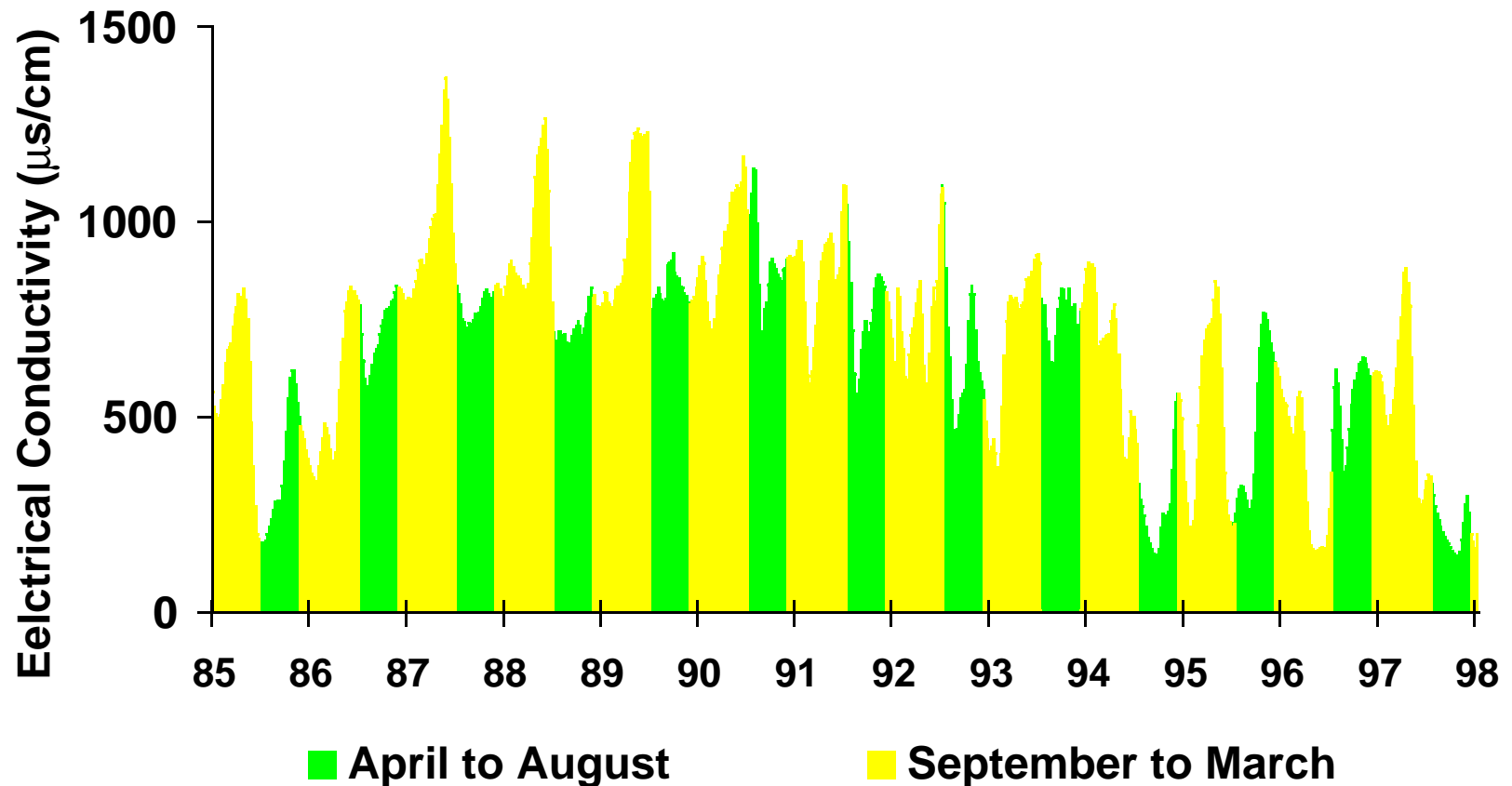
September through March

Current Boron Water Quality Objectives

<u>Location / Season</u>	<u>Monthly Mean (mg/L)</u>
<i>Sack Dam to Merced River:</i>	
15 March to 15 September	2.0 (5.8 maximum)
<i>Merced River to Vernalis</i>	
15 March to 15 September	0.8 (2.0 maximum)
16 September to 14 March	1.0 (2.6 maximum)
critical year	1.3

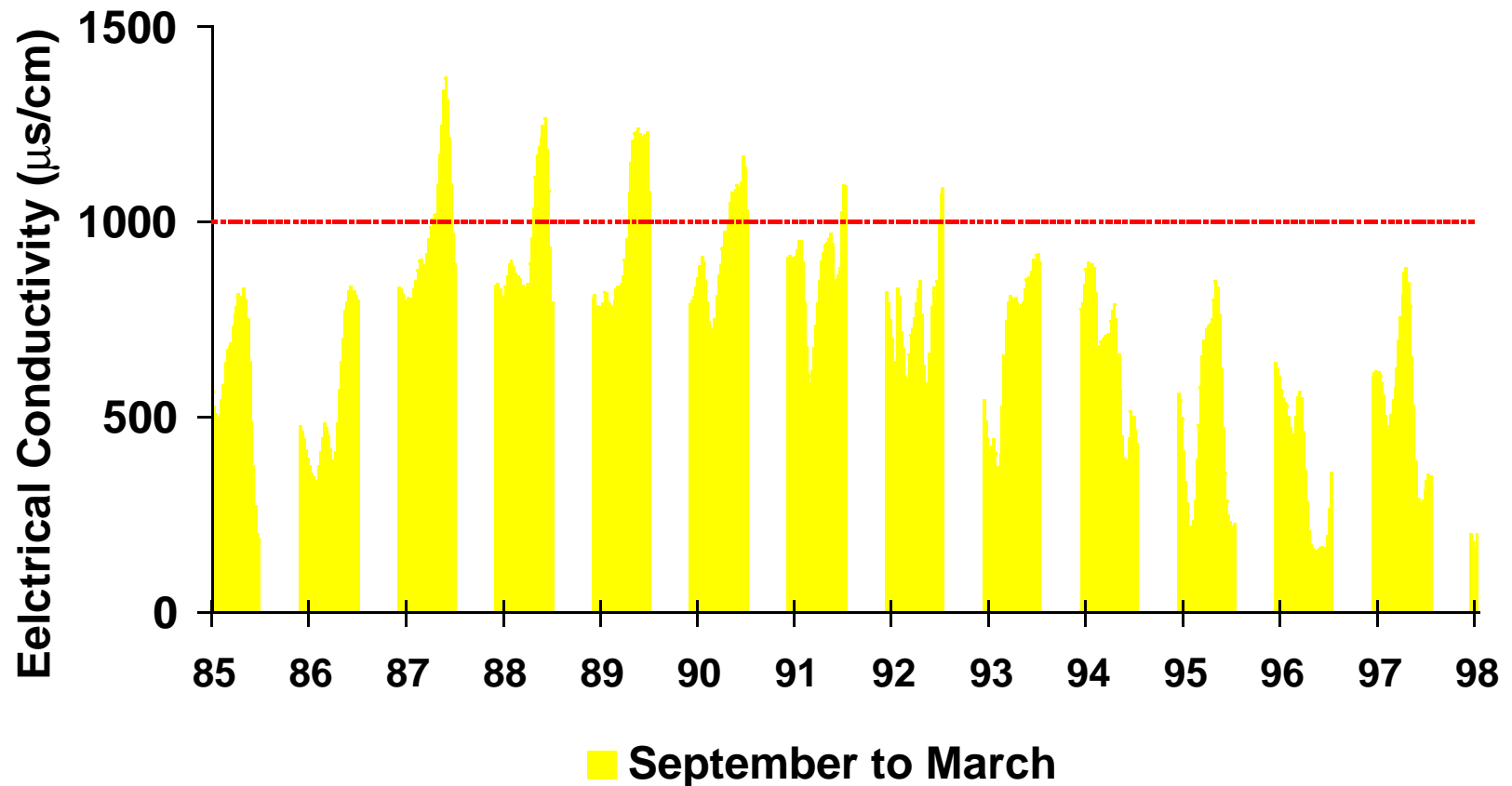
San Joaquin River near Vernalis

30 Day Running Average Electrical Conductivity



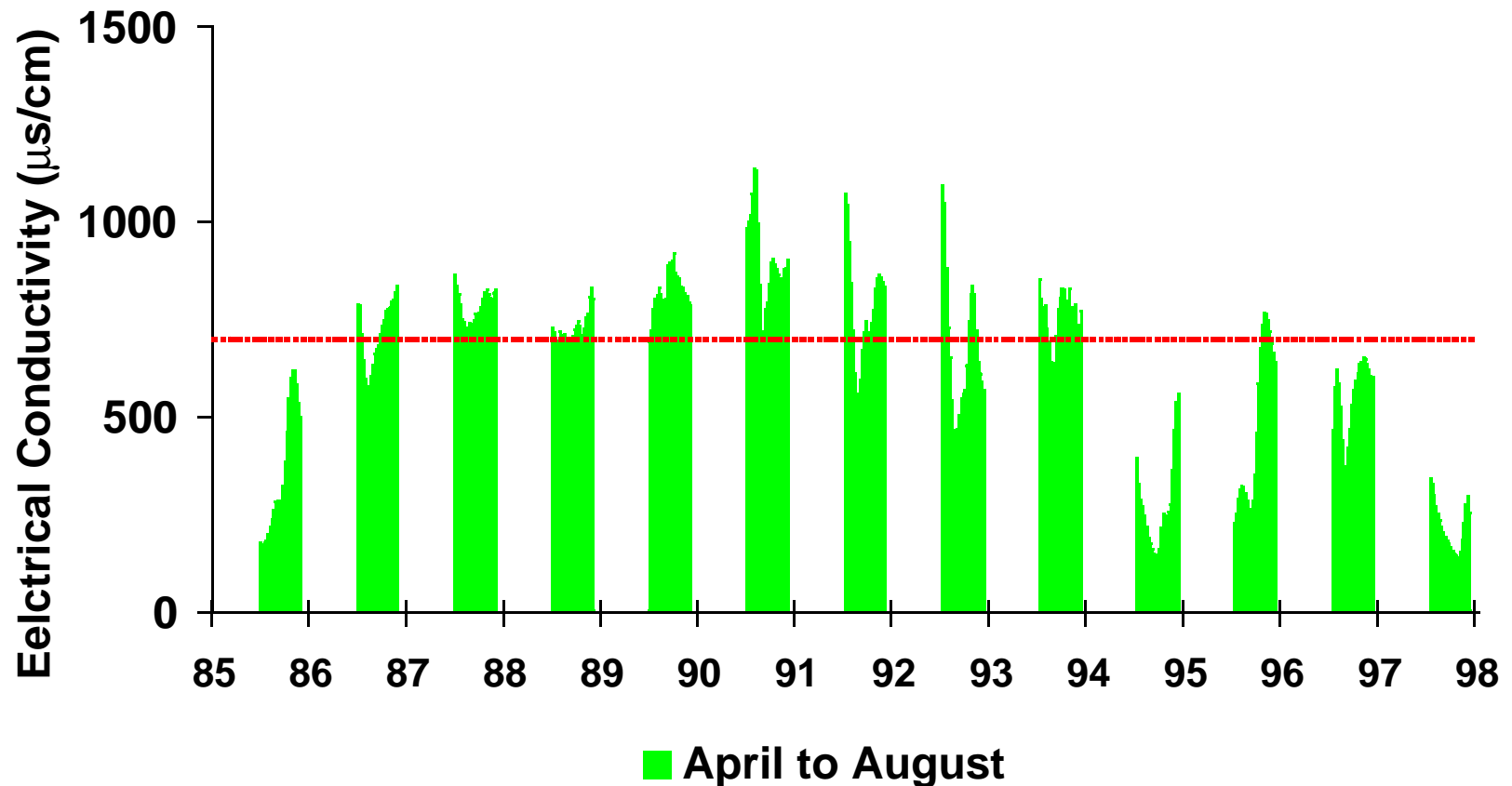
San Joaquin River near Vernalis

30 Day Running Average Electrical Conductivity



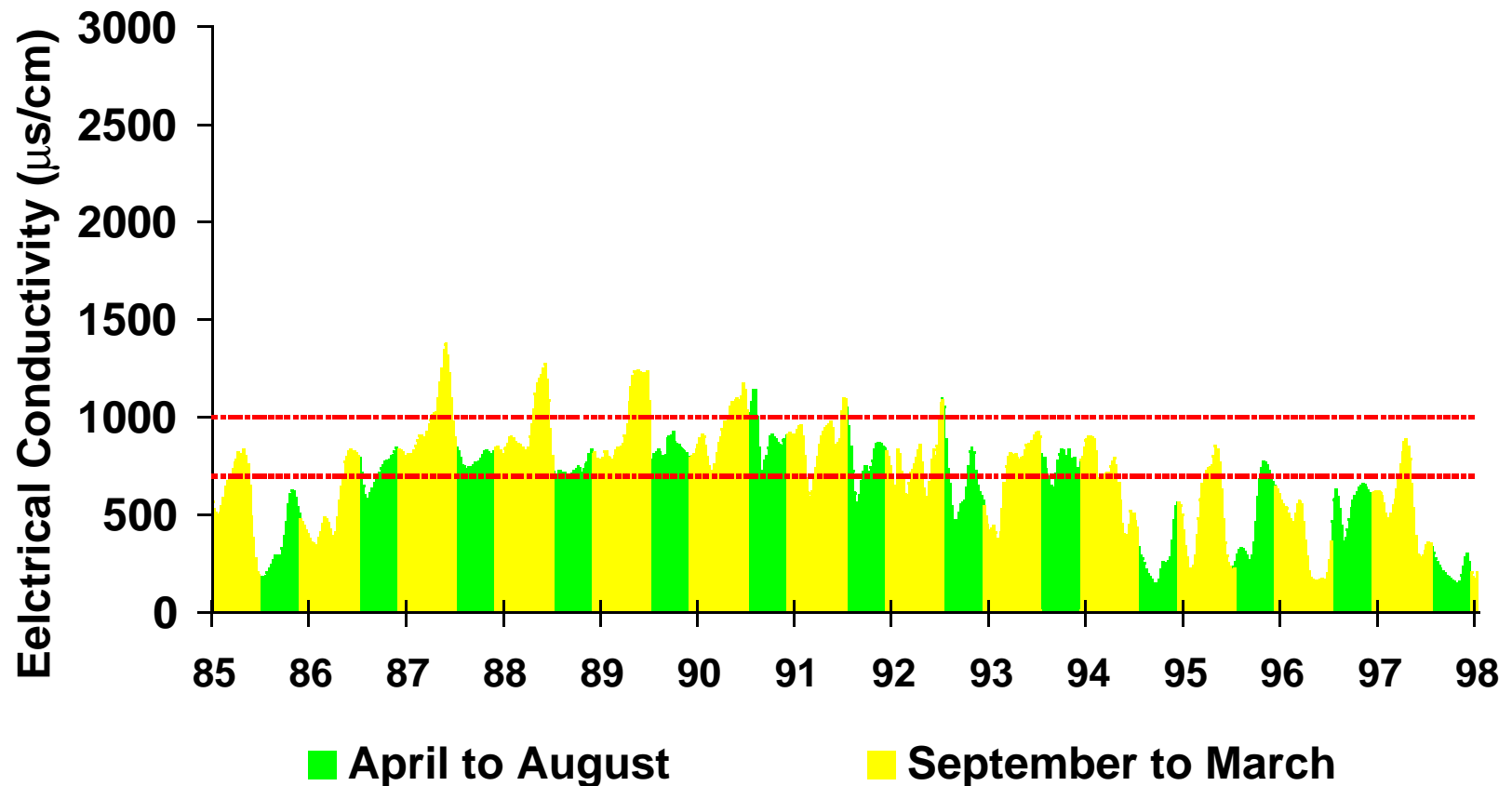
San Joaquin River near Vernalis

30 Day Running Average Electrical Conductivity



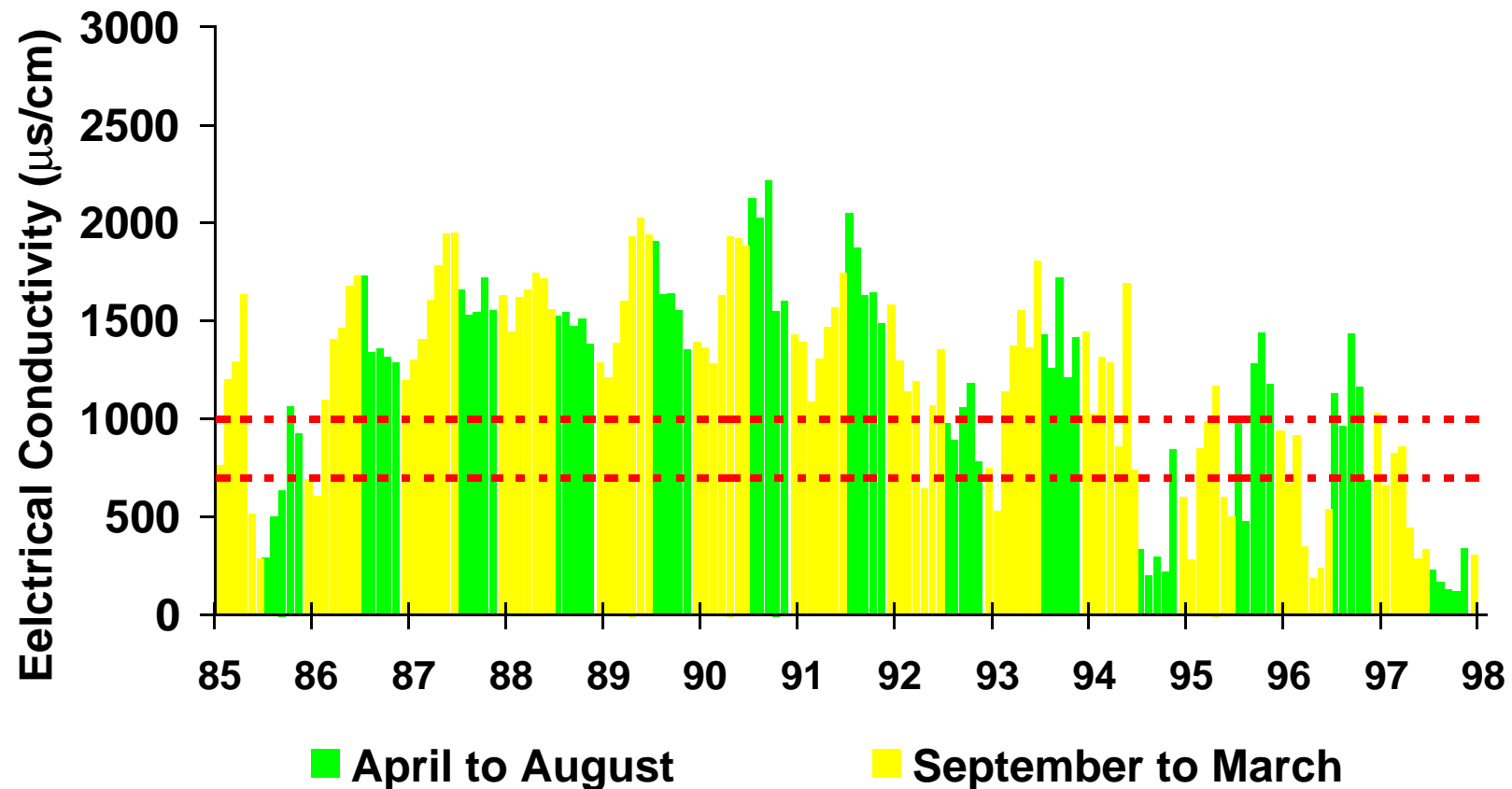
San Joaquin River near Vernalis

30 Day Running Average Electrical Conductivity



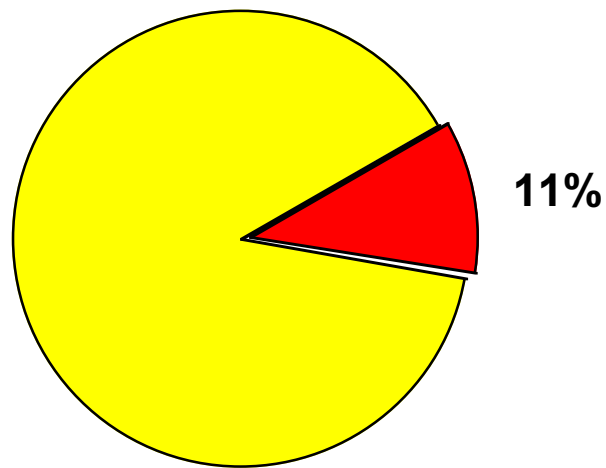
San Joaquin River at Crows Landing

Monthly Average Electrical Conductivity

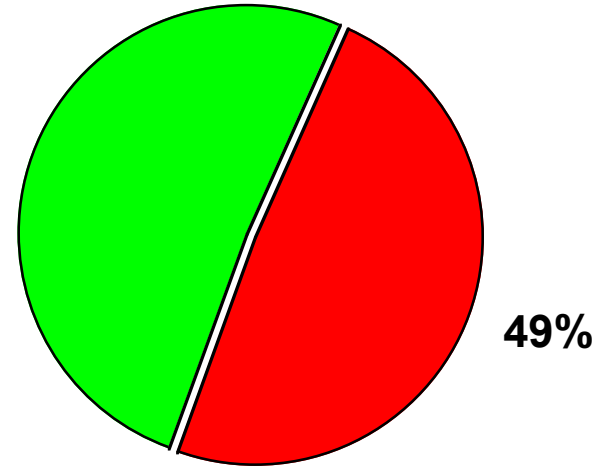


San Joaquin River near Vernalis

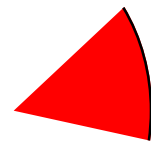
Percent of days that 30-day running average electrical conductivity objective has been exceeded from water year 1986 through 1998



September to March



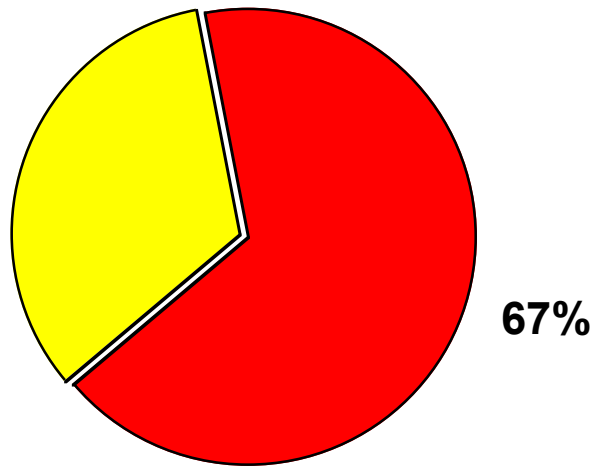
April to August



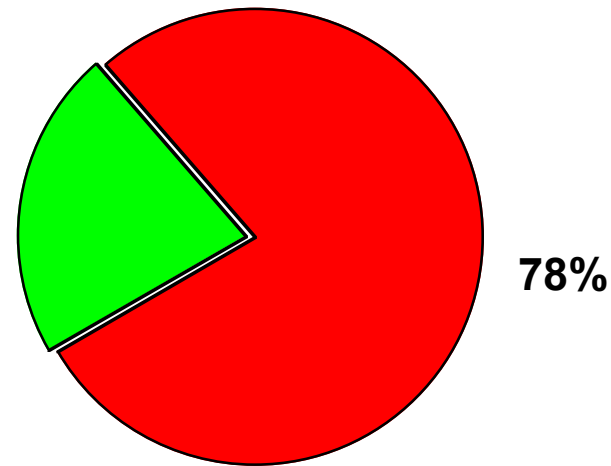
Percent of Days Objective Exceeded

San Joaquin River at Crows Landing

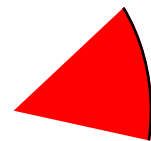
Percent of months that mean monthly electrical conductivity at Crows Landing exceeded Vernalis objectives from water year 1986 through 1998



September to March

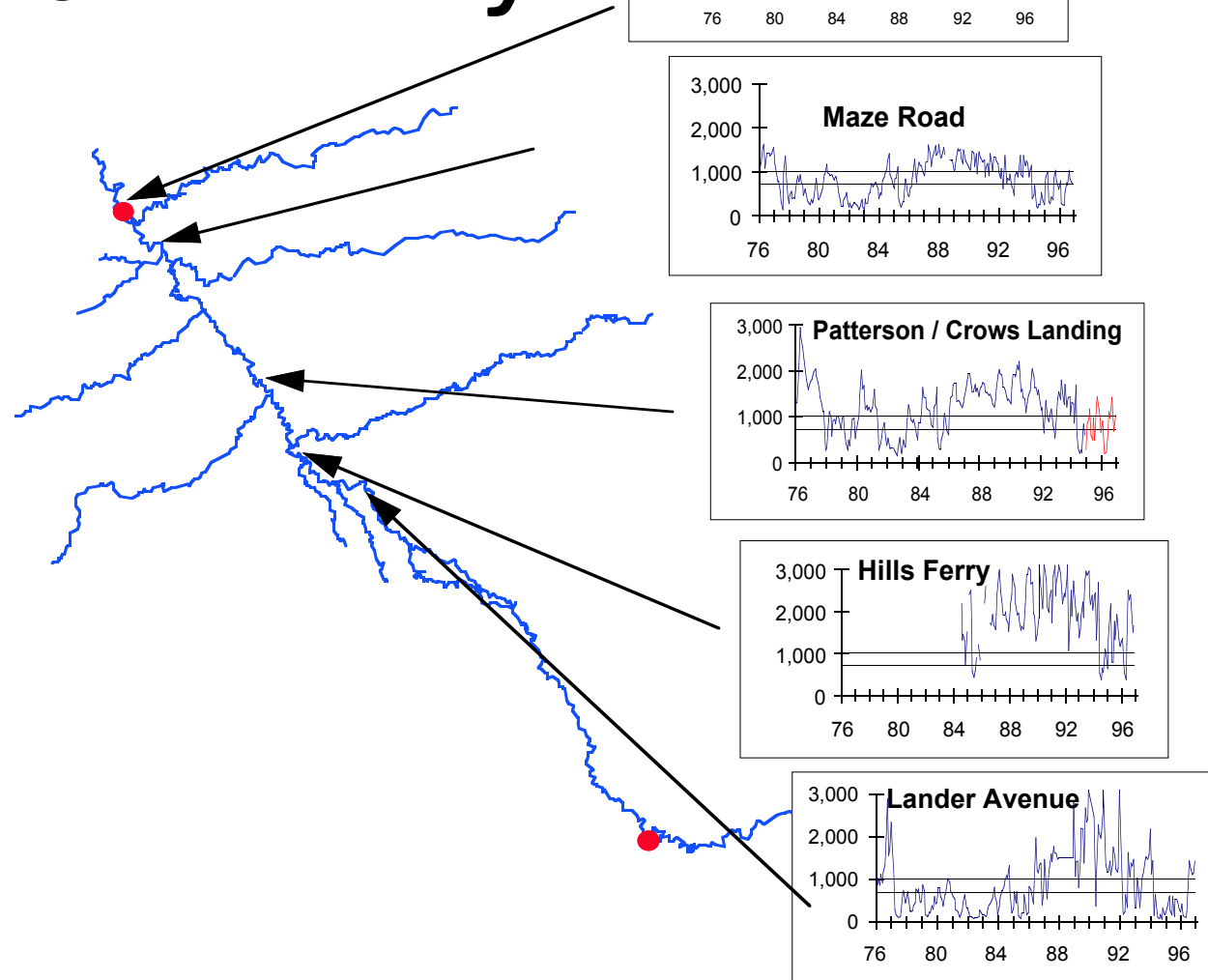


April to August



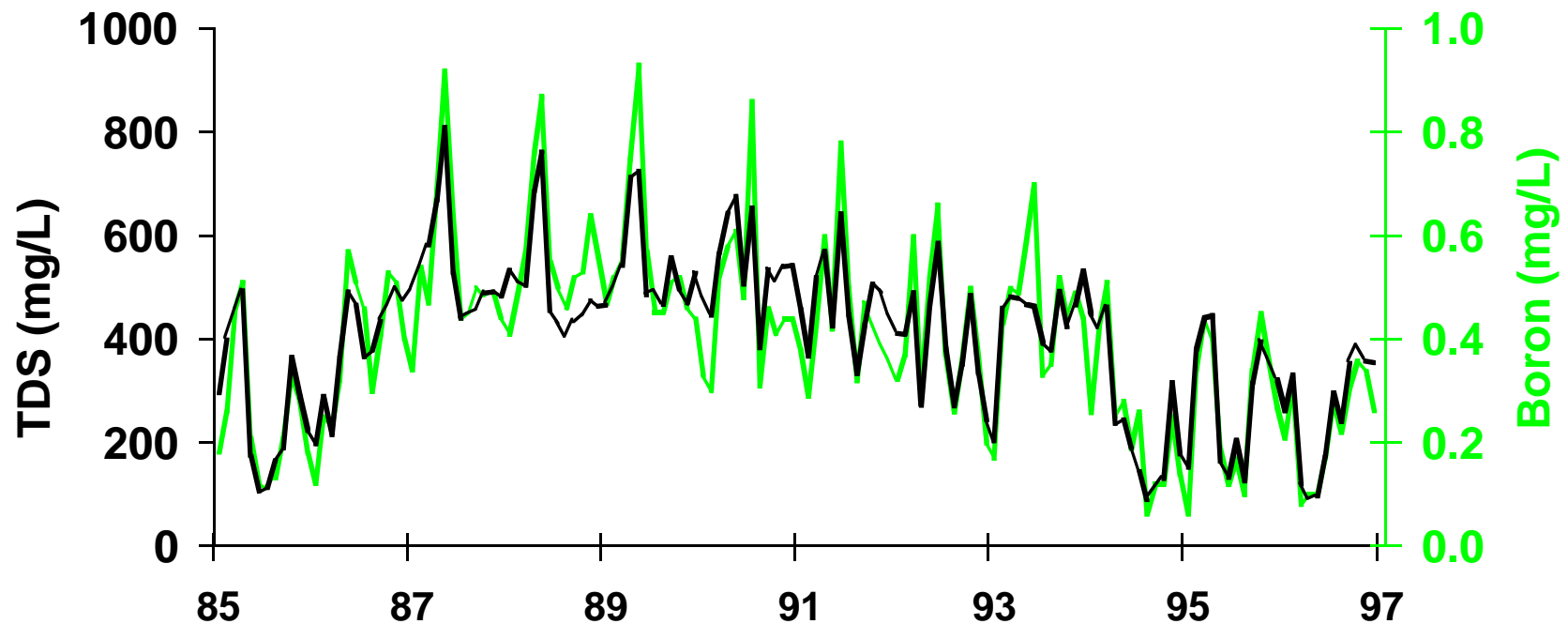
Percent of Months Objective Exceeded

San Joaquin River Electrical Conductivity

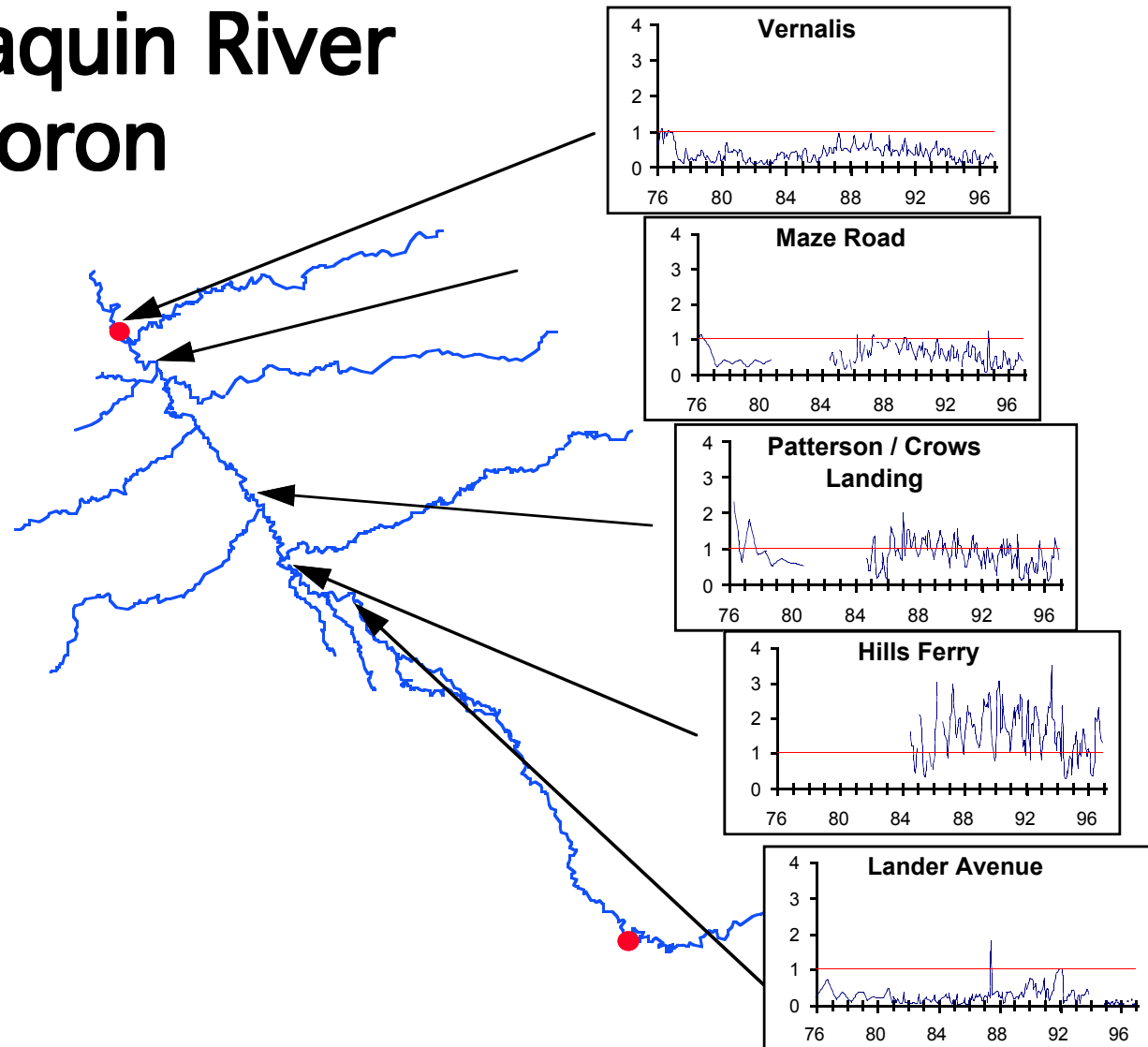


San Joaquin River near Vernalis

TDS and Boron Concentrations



San Joaquin River Boron

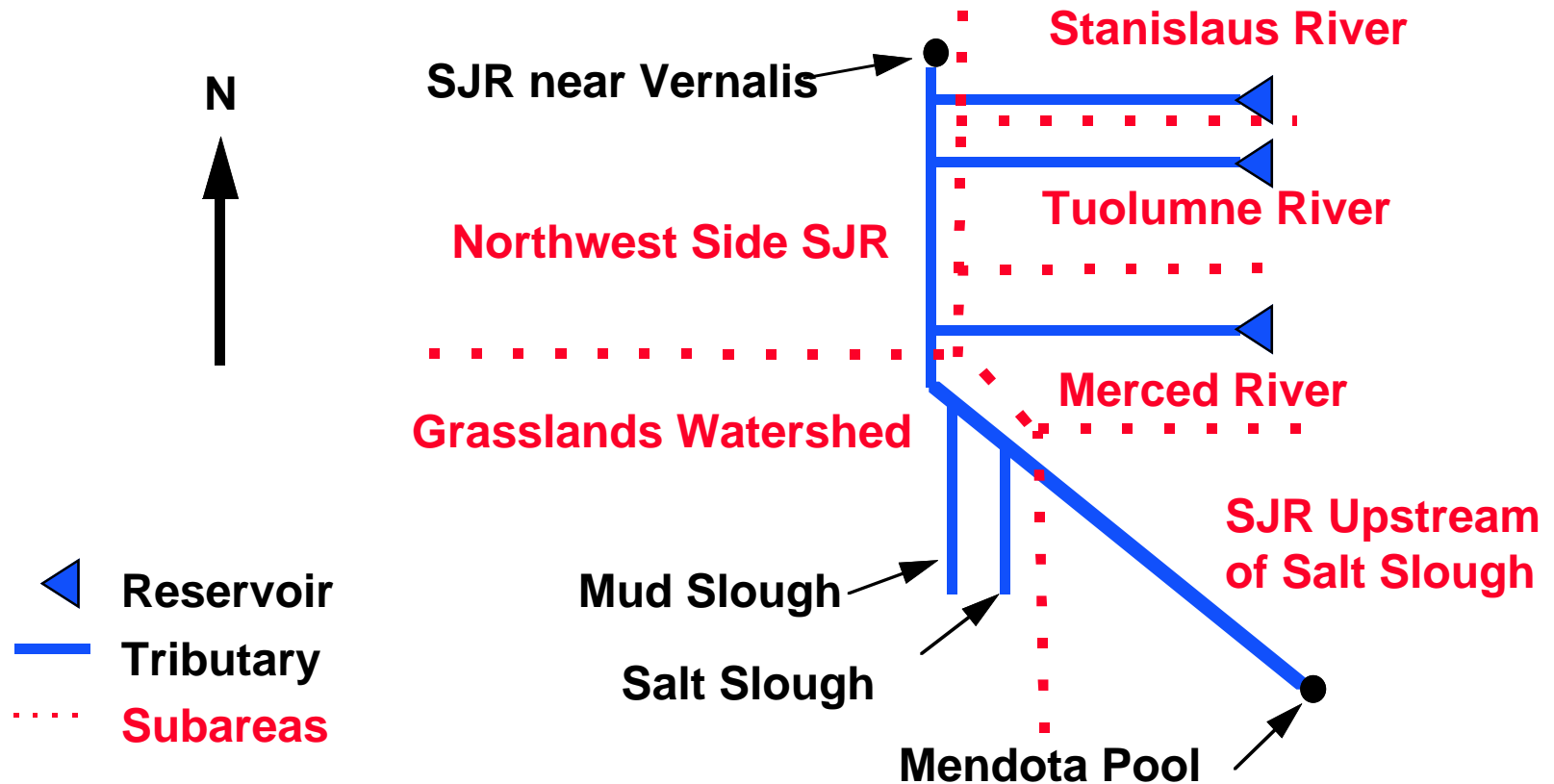


Water Quality is a function of...

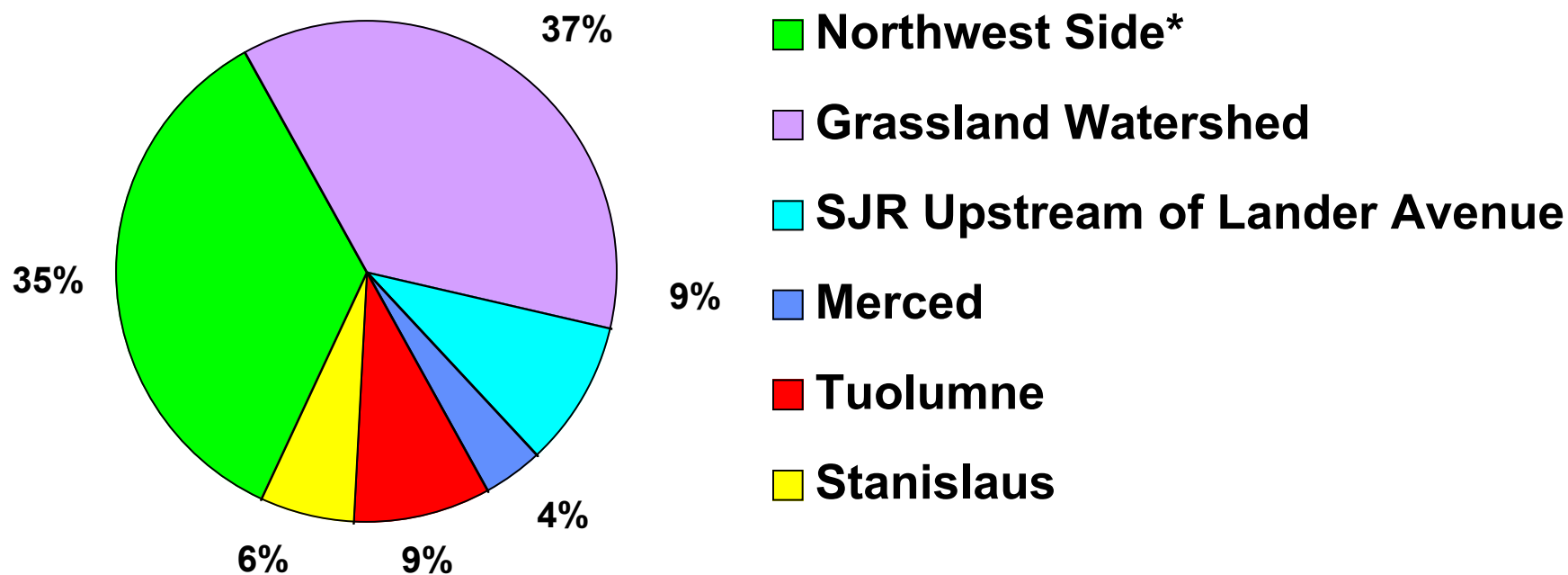
- Dilution flows
- Salt Loads

Where are salt and water coming from?

Lower San Joaquin River Basin Subareas



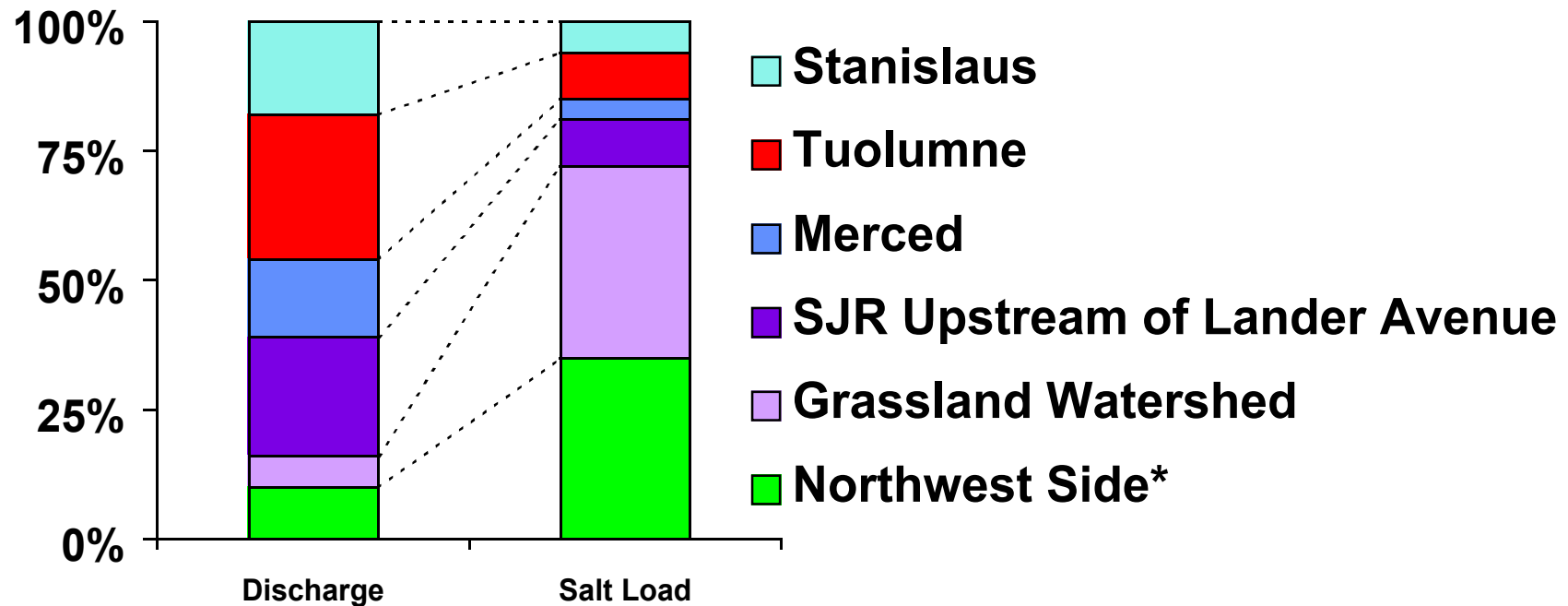
Sources of Salt (Geographic)



Mean Annual Salt Load to SJR for WY 1977 to 1997: 1.1 million tons

*Northwest Side estimated by difference : Vernalis minus sum of other sources

Geographic Sources of Discharge and Salt

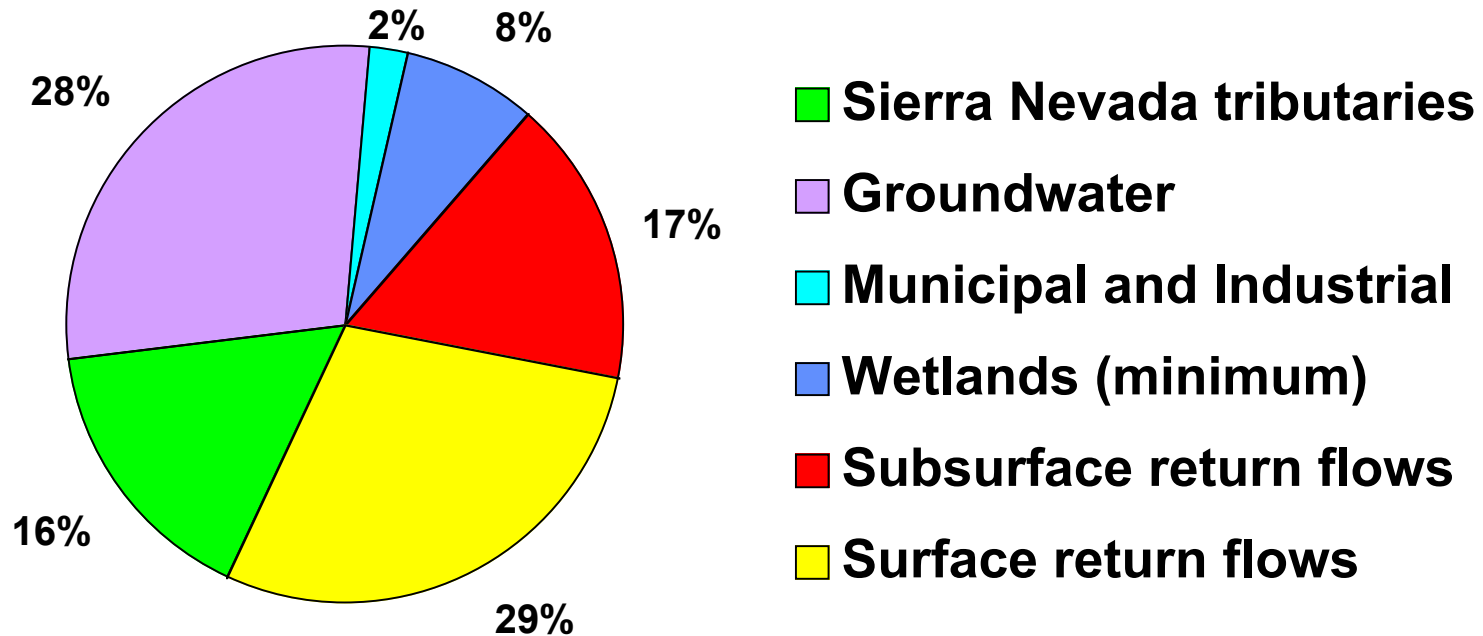


WY 1977 to 1997: Mean Discharge: 3.7 million acre-feet,
Mean Annual Salt Load: 1.1 million tons

Basis: Historical and SJRIO* model data and spreadsheet analyses

*SJRIO: San Joaquin River Input Output Model

Sources of Salt (by type)

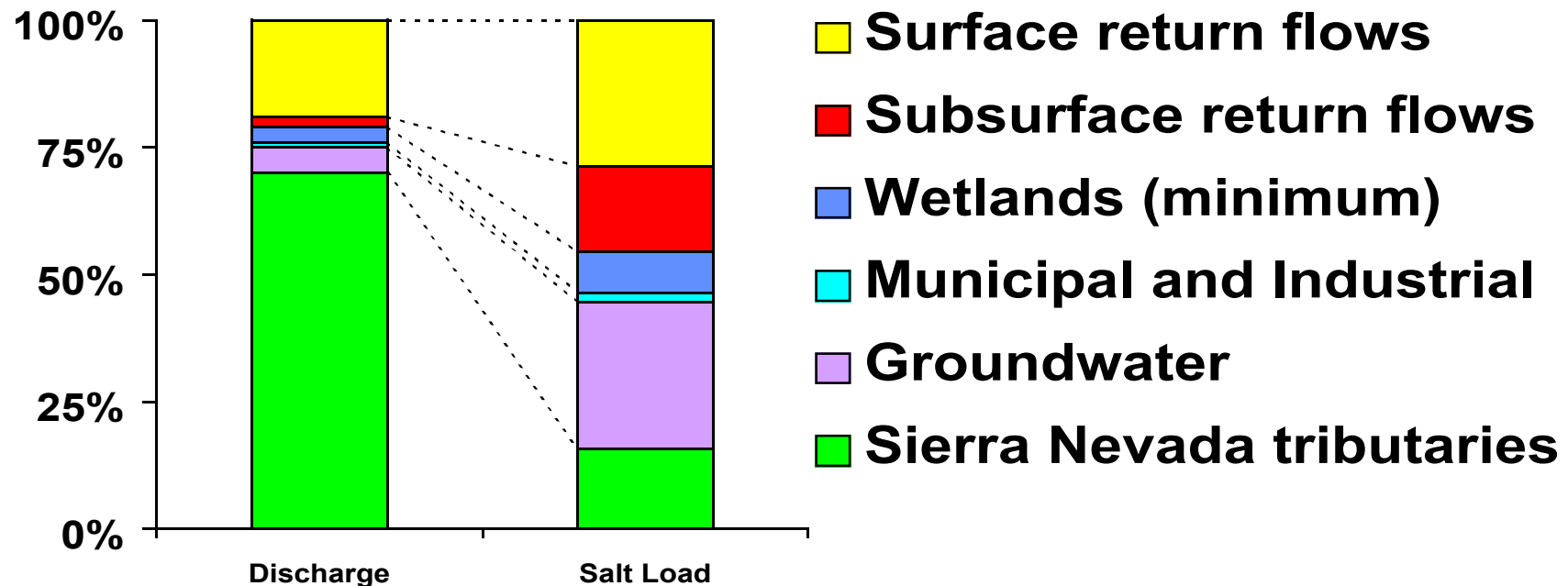


Mean Annual Loading of TDS to SJR for WY 1985 to 1994: 1 million tons

Basis: Historical and SJRIO* model data and spreadsheet analyses

*SJRIO: San Joaquin River Input Output Model

Type Sources of Discharge and Salt



WY 1985 to 1994: Mean Discharge: 1.9 million acre-feet,

Mean Annual Loading of TDS: 1 million tons

Basis: Historical and SJRIO* model data and spreadsheet analyses

*SJRIO: San Joaquin River Input Output Model

What is a Basin Plan Amendment?

- A Basin Plan is the document that explains steps that the Regional Boards will take to protect beneficial uses of surface and groundwater
- Basin Plan Amendments are changes to the Basin Plan that are needed to protect beneficial uses

Components of a Basin Plan Amendment

- Beneficial Use Listing
- Establish Water Quality Objectives
- Develop Implementation Plan

Components of a Basin Plan Amendment

Beneficial Use Listing

- Identify past, present, and probable future beneficial uses of water
- Describe environmental characteristics of watershed
- Determine water quality conditions that could reasonably be achieved

Components of a Basin Plan Amendment

Water Quality Objectives

- Must take into account all beneficial uses
- Set objectives to protect most limiting beneficial use

Components of a Basin Plan Amendment

Implementation Plan

- Describe nature of actions necessary to achieve water quality objectives
- Create time schedule for actions to be taken
- Describe surveillance needed to determine compliance with objectives
- Consider economics

Basin Plan Amendment Process

- Identify subject to be addressed by BPA
- Solicit comments on how to proceed
- Develop a staff report on the proposed BPA
 - description of proposed activity
 - reasonable alternatives followed by proposed alternative
 - mitigation measures

Basin Plan Amendment Process

(continued)

- Request and consider comments from interested parties on draft BPA staff report(s)
- Submit proposed amendment for Technical Peer Review
- Set a formal hearing date with Regional Board
- Respond to comments

Basin Plan Amendment Process

(continued)

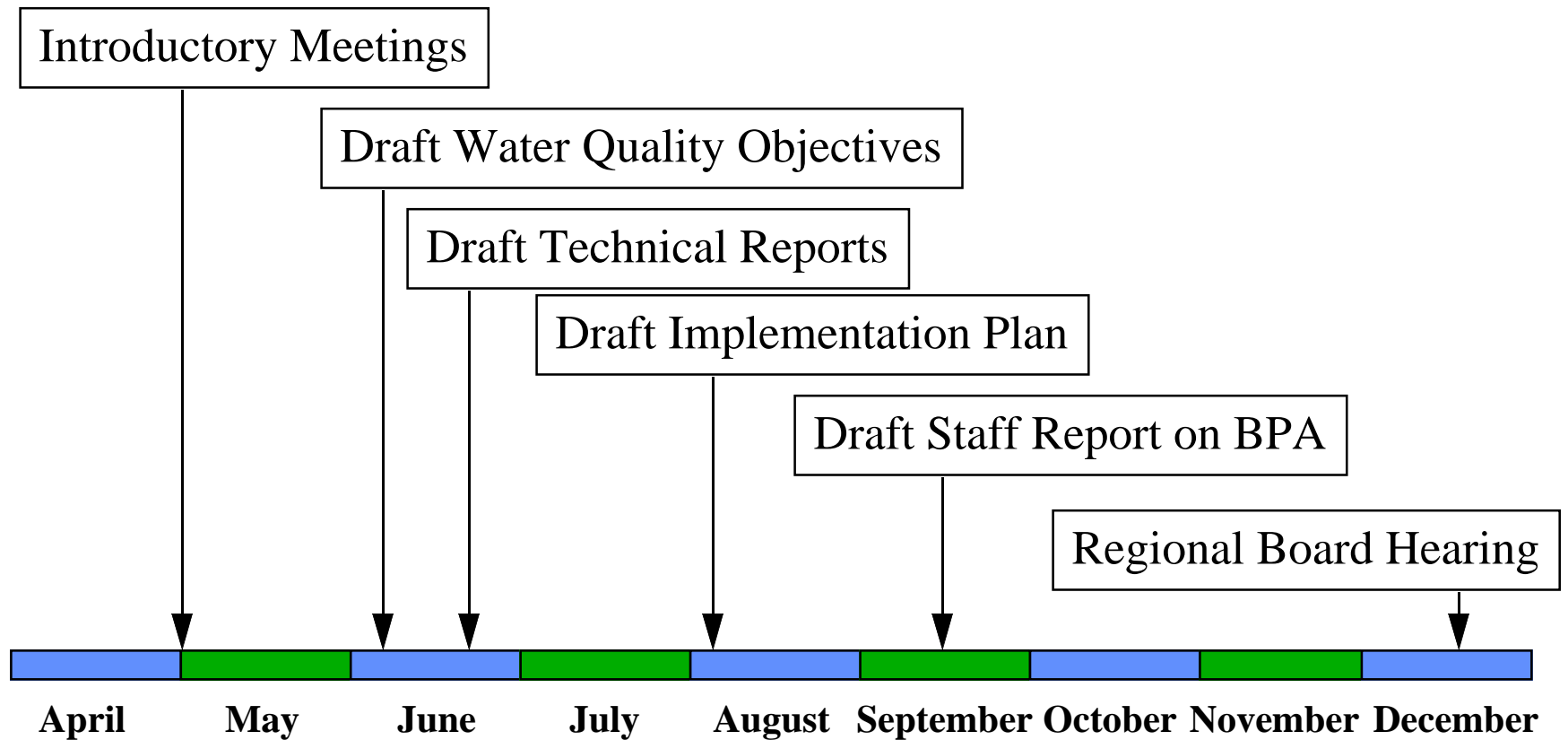
- Conduct formal hearing
 - all interested parties given reasonable opportunity to comment
- After formal hearing...
 - amendment may be adopted as proposed
 - a modified amendment may be adopted
 - staff may be directed to evaluate proposed changes and schedule a future hearing
- Adopted amendment is sent to SWRCB for approval

Basin Plan Amendment Process

(continued)

- State Board must approve amendment
- Approved amendment is sent to:
 - Office of Administrative Law
 - Department of Finance
- Approved Amendment sent to USEPA for review and approval

Timeline



Water Quality Objectives

- Objectives will be proposed for the lower San Joaquin River (not just Vernalis)
- Specific numbers based upon:
 - literature reviews
 - beneficial uses

Salinity Water Quality Criteria

Range of numbers being considered:

Objective ($\mu\text{s}/\text{cm}$)

Source / Beneficial Use

700

Irrigated agriculture

900

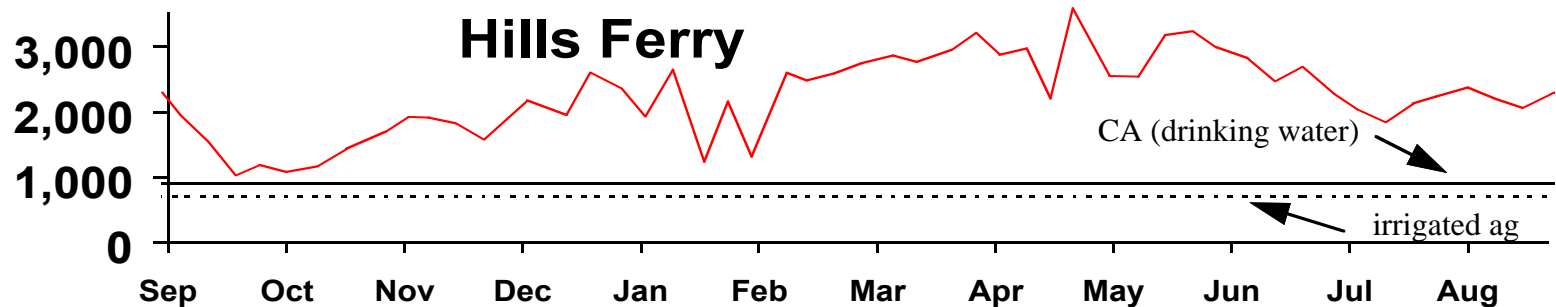
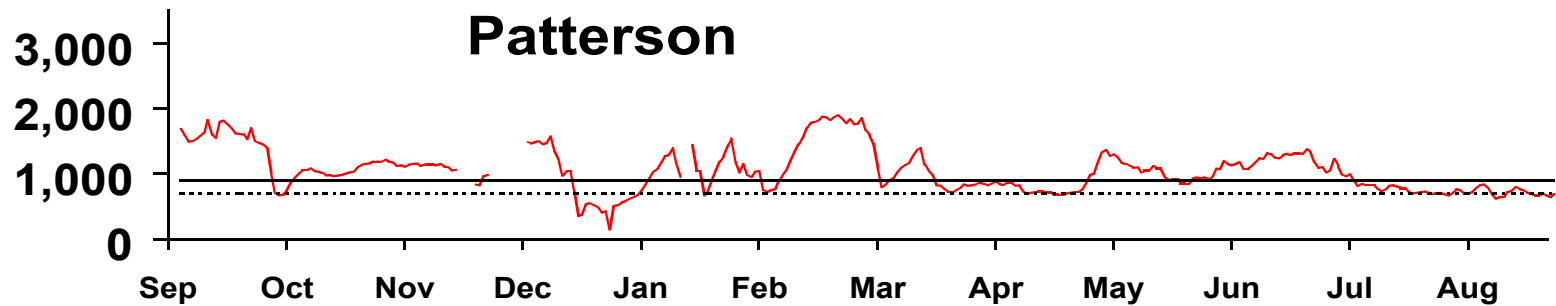
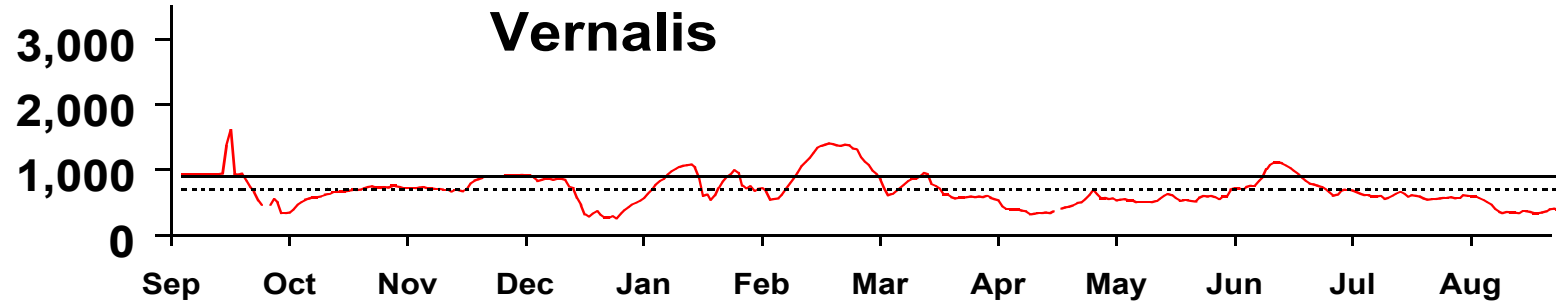
California secondary MCL to
protect drinking water

5,000

Aquatic Life (maximum)

Electrical Conductivity (Water Year 1993)

Electrical Conductivity ($\mu\text{S}/\text{cm}$)



Boron Water Quality Criteria

Range of numbers being considered:

Objective (mg/L)

Source / Beneficial Use

1.0

California State Action Level
to protect drinking water

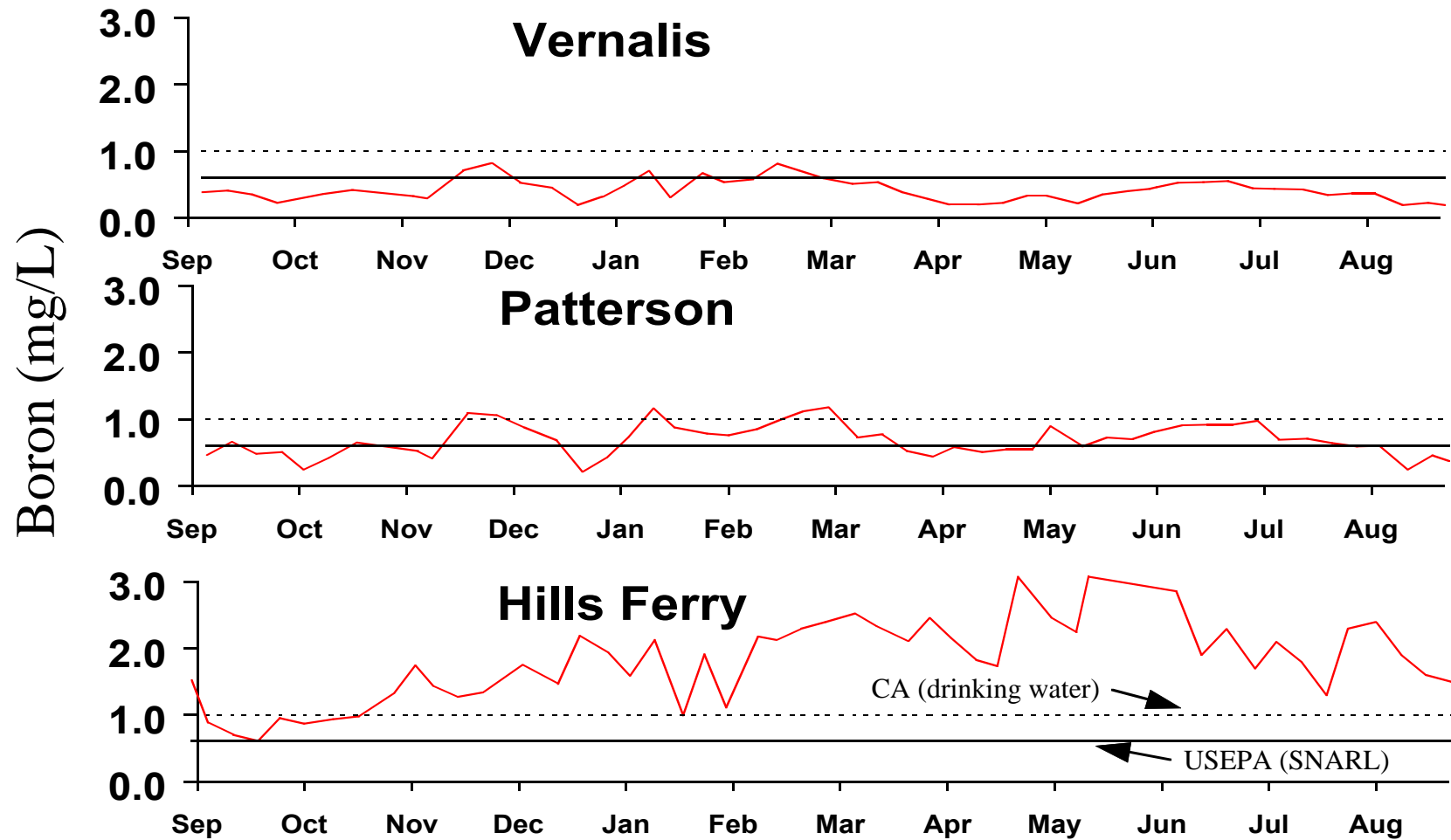
0.6

USEPA (SNARL, IRIS)

0.7

Irrigated Ag (SWRCB
Technical Committee, 1987)

Boron (Water Year 1993)



Implementation Plan

- How do we meet the numbers (and when)?
- Implementation plan is more flexible than establishment of WQOs:
 - various types of programs
 - possible compliance time schedule (allows stepwise improvements)
- Implementation plan will likely incorporate:
 - watershed concept
 - TMDLs

Implementation Tools

- Wide range of actions possible:
 - Voluntary actions
 - Regulatory-based encouragement
 - watershed approach
 - real time management
 - Waste Discharge Requirements
 - Prohibition of Discharge

Implementation Options under Review

- Encouraging formation of watershed groups and development of water management plans
- Real time management to allow the full assimilative capacity of the river to be used

Watershed Management Plans

- individual dischargers combine into a subwatershed or “drainage management entity”
- propose activities to meet WQOs
- may include tradable loads with other subwatersheds

Real Time Management

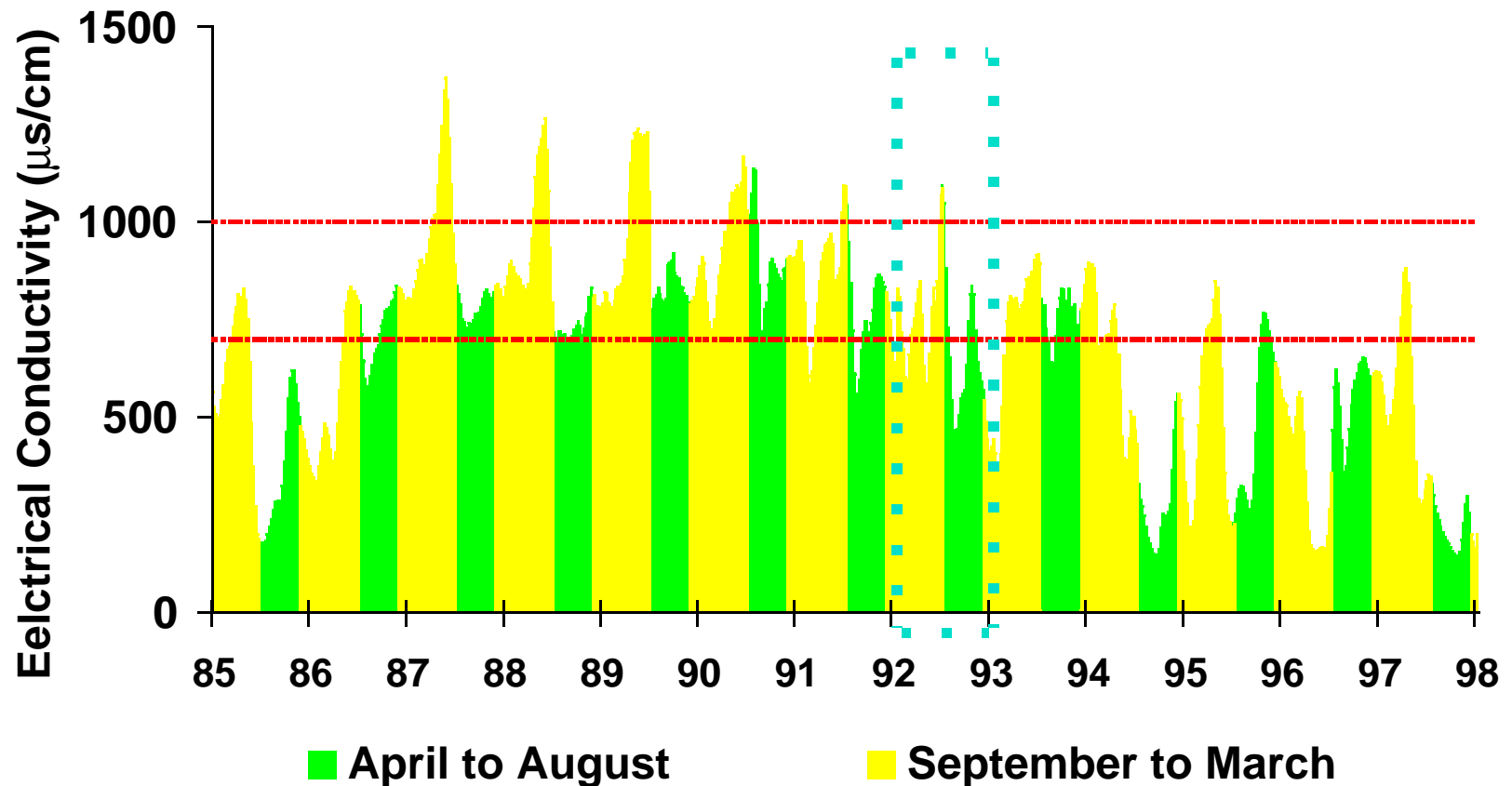
- The coordinated release of saline and fresh water discharges
 - SWRCB supports this approach
 - CALFED has funded a pilot program of monitoring, modeling, and management
 - interested parties have signed a MOU

Requirements for Real Time Management:

- Opportunity
- Real Time Monitoring
- Real Time Modeling
- Real Time Operations

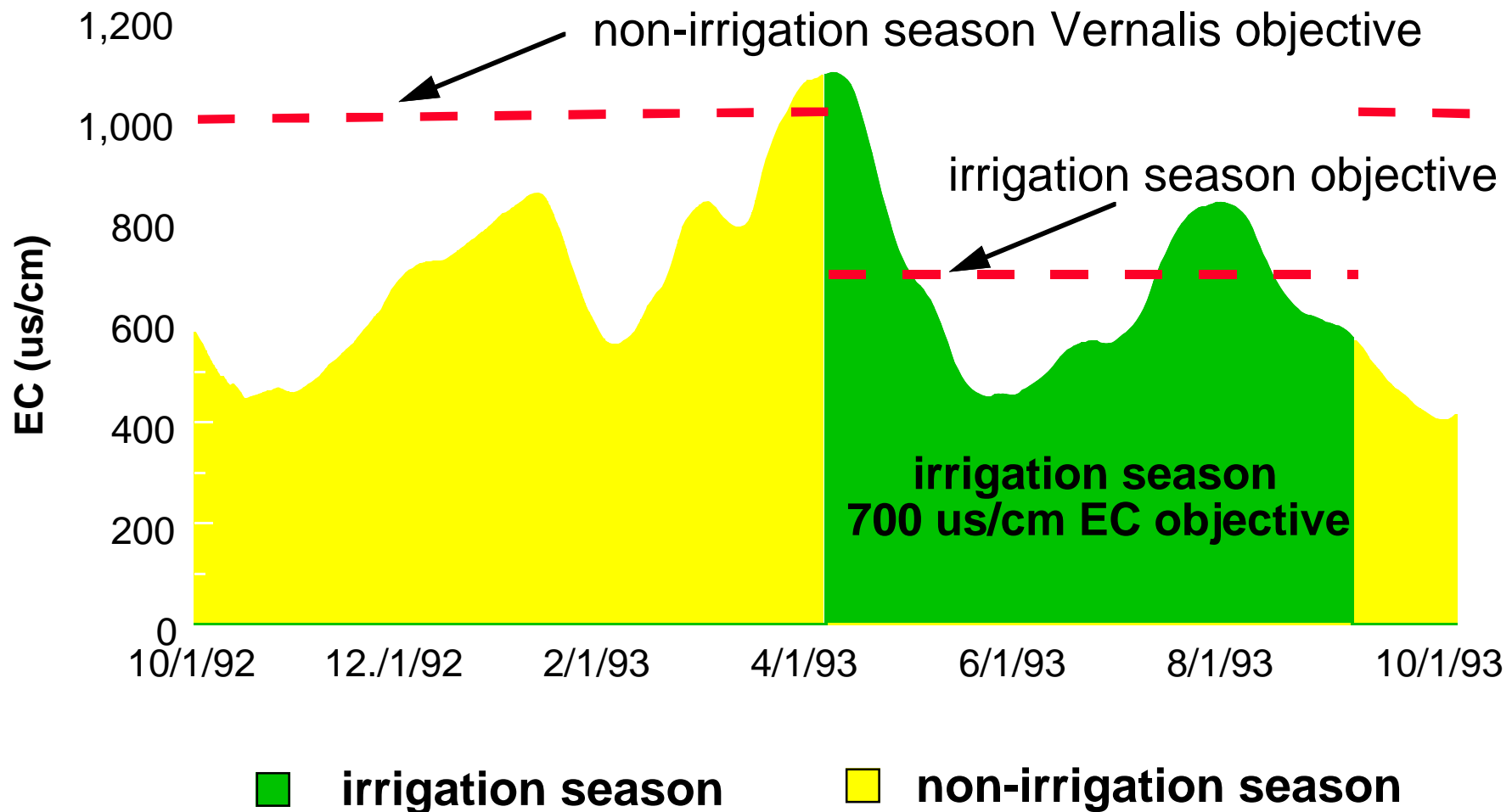
San Joaquin River near Vernalis

30 Day Running Average Electrical Conductivity



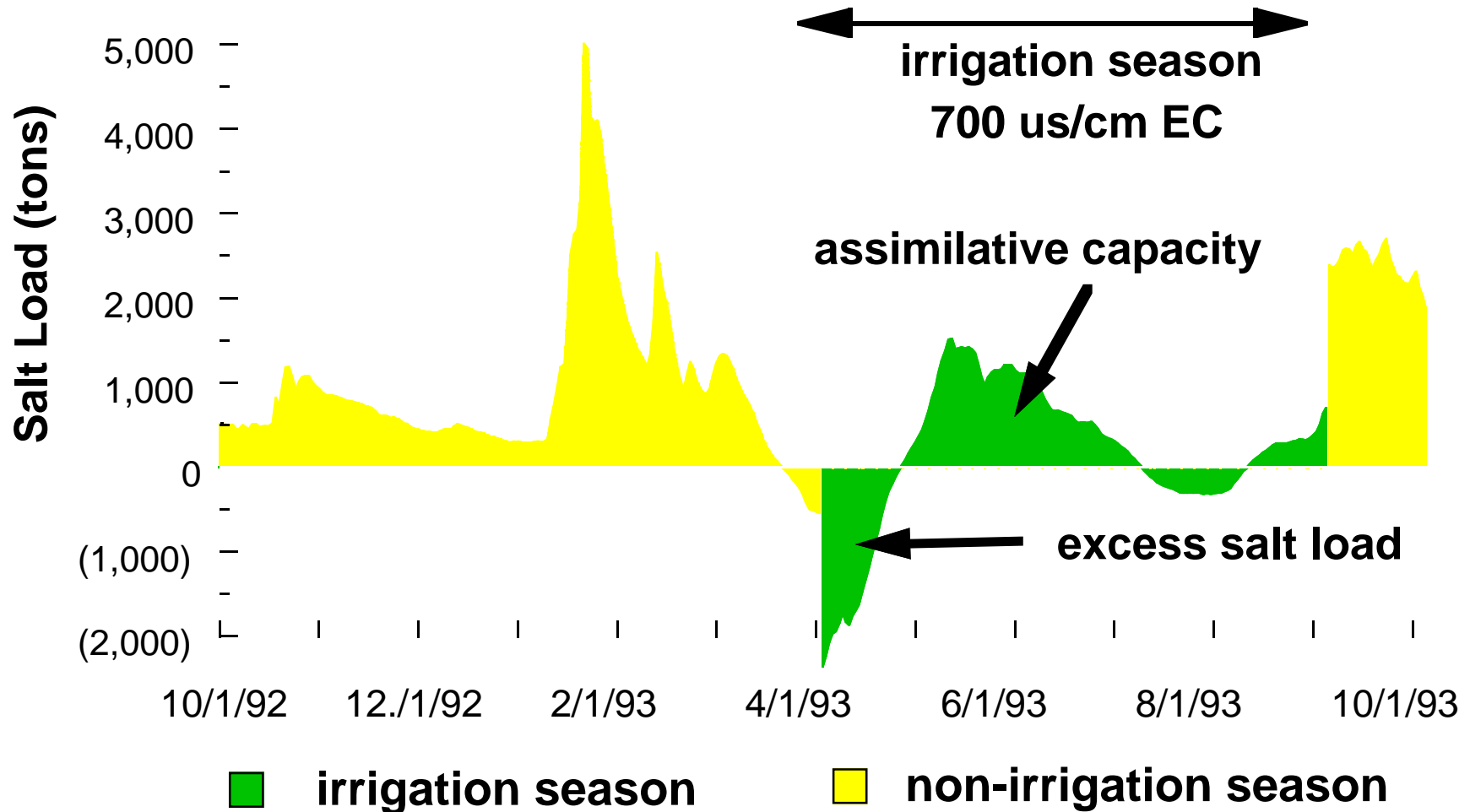
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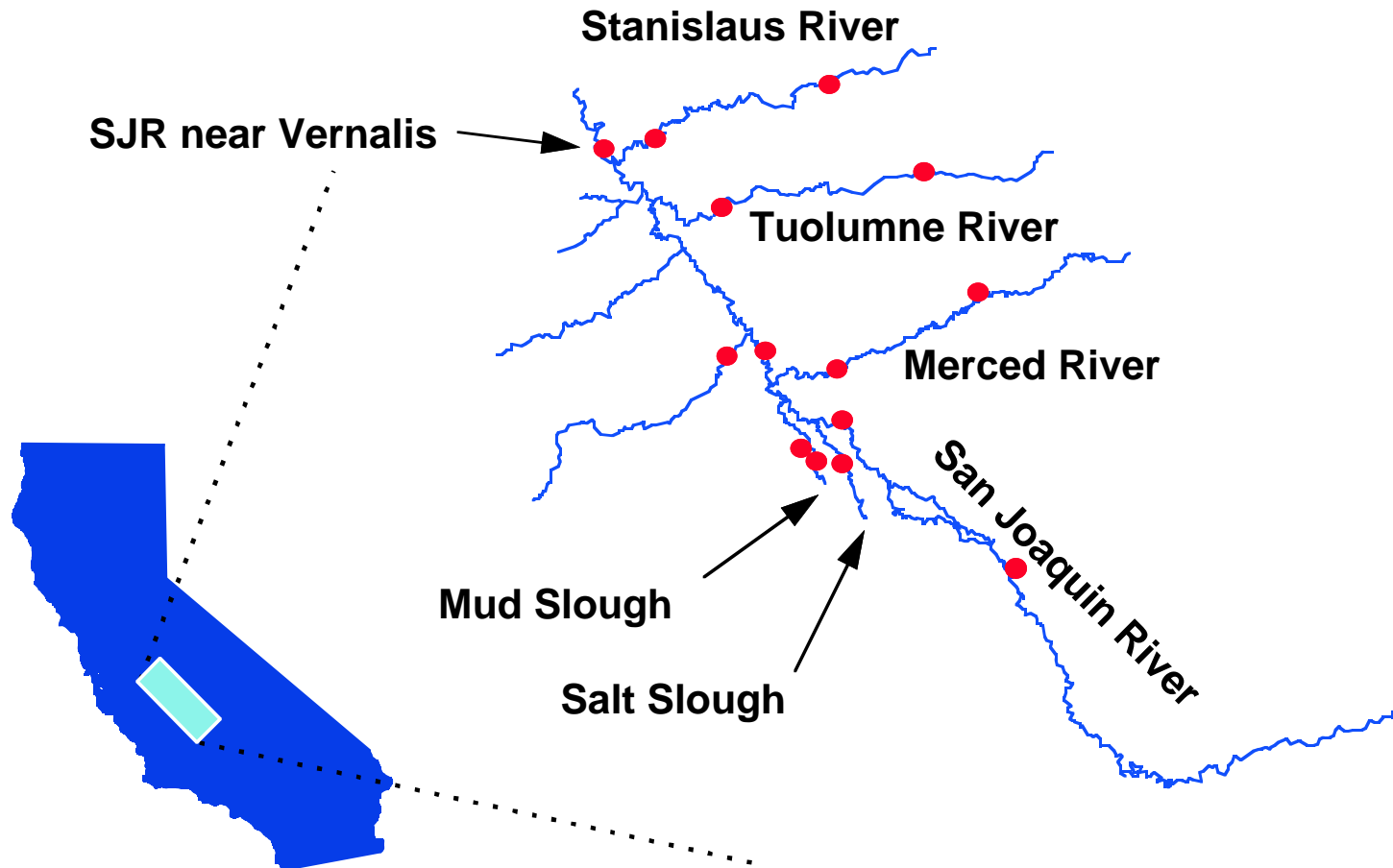


San Joaquin River near Vernalis

Daily Assimilative Capacity for Salt



Lower San Joaquin River Basin Real Time Monitoring Stations



Have Questions been Answered?

- Why a Basin Plan Amendment for Salt and Boron in the San Joaquin River? ✓
- What is a Basin Plan Amendment? ✓
- What is the Basin Plan Amendment Process? ✓
- What is the Current Status of BPA? ✓
- What can Interested Parties Do?

What can you do?

- Keep in touch
 - help us update our mailing list
- Comment:
 - review draft reports
 - discuss locally
 - provide consolidated comments
- Consider common interests in the basin;
form watershed groups

Upcoming Events

- June: Draft WQOs released
- July: Local meetings held on proposed WQOs
- August: Draft Report on Proposed Implementation Plan and Alternatives
- August: Local meetings held on Implementation Plan
- September: Final Draft

CRWQCB, CVR Contacts

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